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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/709,222

04/22/2004

Marwan H. Khater

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12/21/2004

International Business Machines Corporation  
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EXAMINER

NGUYEN, JOSEPH H

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/709,222		KHATER, MARWAN H.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Joseph Nguyen		2815	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on the election filed on 11/24/2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 11-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-10 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/22/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of claims 1-10 in the reply filed on 11/24/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Oda et al..

Regarding claim 1, Oda et al. discloses on figure 1 a bipolar transistor comprising a collector region 3; an intrinsic base layer 9 overlying said collector region, said intrinsic base layer including a single crystal semiconductor (col. 3, lines 27-28); an emitter 14 disposed within a first opening overlying said intrinsic base layer 9; a raised extrinsic base including a raised extrinsic base layer 6 overlying said intrinsic base layer 9; and a link up region 10 electrically connecting said raised extrinsic base layer 6 to said intrinsic base layer 9, said link up region self aligning said raised extrinsic base 6 to said emitter 14, said link up region disposed in a second opening (readable on both sides of figure 1) separate from said first opening and in an undercut region extending from said second opening below said raised extrinsic base layer 6.

Regarding claim 2, Oda et al. discloses on figure 1 said second opening is oriented in vertical direction substantially perpendicular to said intrinsic base layer 9 and said undercut region extends horizontally outward from said second opening in a first direction towards said emitter 14.

Regarding claim 7, Oda et al. discloses on figure 1 said link up region 10 includes at least one material selected from the group consisting of doped semiconductors (col. 3, lines 30-31).

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Regarding claim 9, Oda et al. discloses on figure 1 said single crystal semiconductor 9 includes a semiconductor alloy (col. 3, lines 27-28), such that said intrinsic base layer 9 forms a heterojunction with at least said collector region 14.

Regarding claim 10, Oda et al. discloses on figure 1 said semiconductor alloy 9 consists essentially of silicon germanium (col. 3, lines 27-28).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. as applied to claim 1 above.

Regarding claim 3, Oda et al. discloses on figure 1 substantially all the structure set forth in the claimed invention except the second opening having annular shape. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oda et al. by having the second opening having annular shape for the purpose of effectively forming a bipolar transistor, since discovering this shape generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

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Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. as applied to claim 1 above, and further in view of Oue et al..

Regarding claim 8, Oda et al. discloses on figure 1 said raised extrinsic base layer 6 includes a layer of a polycrystalline semiconductor (col. 7, line 67) and a low resistance layer 18 overlying said polycrystalline semiconductor layer. Oda et al. does not disclose said low resistance layer including at least one material selected from metal. However, Oue et al. discloses on figure 12 said low resistance layer 24 including at least one material selected from metal (col. 7, lines 10-11). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Oda et al. by having said low resistance layer including at least one material selected from metal for the purpose of improving the electrical connection of a bipolar transistor.

### ***Allowable Subject Matter***

Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If

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attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

JN  
December 7, 2004

A handwritten signature in black ink, appearing to read 'A. Wilson', with a long horizontal flourish extending to the right.

ALLAN R. WILSON  
PRIMARY EXAMINER